

PATRICK F. DOBSON

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EDUCATION

Stanford University, Stanford, CA

Ph.D. Geology (1986)

Dissertation: *The petrogenesis of boninite: A field, petrologic and geochemical study of the volcanic rocks of Chichi-jima, Bonin Islands, Japan*

MS Geology (1984)

Thesis: *Volcanic stratigraphy and geochemistry of the Los Azufres geothermal center, Mexico*

Williams College, Williamstown, MA

BA Geology (*magna cum laude*) (1981)

WORK HISTORY

Energy Geosciences Division, Lawrence Berkeley National Laboratory, Berkeley CA

2016-Present **Program Lead, Geothermal Systems Program**

2010-Present **Career Earth Staff Scientist**

2003-2010 **Career Geological Research Scientist**

2000-2003 **Geological Scientist**

Office of Basic Energy Sciences, US Department of Energy, Germantown MD

2007-2009 **Deputy Program Manager, Geosciences Program** (on detail from LBNL)

1999-2001 **Consultant, Empresa Nacional del Petroleo (ENAP)**, Santiago Chile

Unocal Geothermal & Power Operations, Unocal Corporation, Santa Rosa CA

1998-1999 **Advising Geologist**

1994-1998 **Senior Geologist**

Unocal Science & Technology Division, Unocal Corporation, Brea CA

1989-1994 **Research Geologist**

Department of Geological Sciences, University of California, Santa Barbara CA

1989 **Postdoctoral Research Fellow**

Division of Geological & Planetary Sciences, California Institute of Technology, Pasadena CA

1986-1989 **Postdoctoral Research Fellow**

AREAS OF SCIENTIFIC INVESTIGATION

Water-rock interaction related to geothermal systems and high-level radioactive waste repositories; Development of conceptual models for geothermal systems through integration of geologic, geochemical and geophysical data; Application of natural analogues to evaluate radionuclide transport for nuclear waste repositories; Igneous petrology; Geologic evaluation of petroleum systems; Stable isotope geochemistry; Fracture stimulation for Enhanced Geothermal Systems; Geothermal play fairway analysis

TECHNICAL EXPERTISE

Field: Geological field mapping, sampling of rocks, waters, and gases associated with exploration for geothermal systems, rigsite geology and core logging.

Computational: Coupled process modeling of hydrothermal systems using TOUGHREACT.

Laboratory: Isotope exchange reaction experiments, geochemical and isotopic analysis of geologic samples (rocks, minerals, fluids, gases) using electron microprobe, XRD, XRF, mass spectrometry, petrographic analysis and interpretation of thin sections.

Project Management: Planning and managing budgets and staff, assuring projects meet milestones, and overcoming technical and logistical challenges to meet project objectives in a timely and cost-effective manner.

SOME RECENT SYNERGISTIC ACTIVITIES AND PROFESSIONAL SERVICE

- Moderator/Organizer, International panel “Global Impact and Innovation Session”, *Geothermal Rising Conference* (2021)
- Lead, Resource Exploration and Confirmation Task Force, US DOE Geothermal Technologies Office *GeoVision Study* (2016-2018)
- Keynote speaker, *New Zealand Geothermal Workshop* (2016)
- Panelist, *Technical Workshop on Clean Energy Across the Borders*, organized by the California Energy Commission (2016)
- Panelist, *Geothermal Best Practices for Risk Reduction Workshop*, organized by U.S. Department of State and Geothermal Energy Association (2014)
- Speaker, *Geothermal Energy Transformations: Nationwide Resources and Value Chains*, Energy from the Earth Briefing Series, Washington, D.C. (2014)
- Member, Editorial Board, *Geothermics* (2009-present)
- Member, DOE Geothermal Technologies Program Technical Monitoring Teams, *Enhanced Geothermal Systems and Innovative Exploration Technologies* (2009-2018)
- Leader, Field trip to The Geysers geothermal field, AAPG Hedberg Conference on Enhanced Geothermal Systems (2011)
- Reviewer: *Geothermics*, *Geology*, *Nature Geoscience*, *Environmental Earth Sciences*, *Geophysical Research Letters*, *Geothermal Energy Science*, *Journal of Asian Earth*

Sciences, Energies, Scientific Drilling, Journal of Energy Resources Technology, Geothermal Resources Council Transactions, DOE Geothermal Technologies Program Peer Review, Comisión Nacional de Investigación Científica y Tecnológica (Chile), World Geothermal Congress, New Zealand Geothermal Workshop, UK Engineering and Physical Sciences Research Council, American Rock Mechanics Association

- Invited visit to Santiago, Chile, Energy and Climate Partnership of the Americas initiative (US-Chile), with six lectures to government, industry, and academic audiences (2011)
- Participant, DOE Geothermal Technologies Program, *Innovative Exploration Technologies Needs Assessment* Workshop (2010)
- Student advisor, Berkeley Lab Internship for Precollegiate Scholars (2010)
- Organized 3 DOE Basic Energy Sciences workshops: *Computational and numerical geosciences*, *Basic research relevant to geological CO₂ sequestration*, and *Experimental and theoretical geochemistry* (2007-2009)

AWARDS

Outstanding Research Award, Geothermal Rising	2022
Geological Society of America Fellow	2020
SPOT Awards (10), LBNL	2002, 2006, 2014, 2015, 2018, 2019, 2020, 2021
Best Oral Presentation, EGS Collab Session, Geothermal Resources Council Annual Meeting	2017
Fulbright Specialist Grant in Environmental Science, Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE)	2017
Geothermal Special Achievement Award, Geothermal Resources Council	2012
Fulbright Specialist Grant in Environmental Science, University of Chile	2012
Outstanding Contributions in Geosciences Research Award, DOE Basic Energy Sciences	2009
Special Recognition Awards (3), Unocal Corporation	1995, 1998
Fred L. Hartley Research Center Creativity Award, Unocal Corporation	1992
Harold T. Stearns Fellowship, Geological Society of America	1984
Exxon Teaching Fellowship, School of Earth Sciences, Stanford University	1982-1985
Horace F. Clark Prize, Williams College	1981
Phi Beta Kappa, Williams College Chapter	1980

CURRENT PROFESSIONAL MEMBERSHIPS

American Geophysical Union, Geological Society of America, Geothermal Rising, Geological Society of Washington

PUBLICATIONS

JOURNAL ARTICLES

1. Jin, W., Atkinson, T., Doughty, C., Neupane, G., Spycher, N., Dobson, P., McLing, T., Podgorney, R., and Smith, R. (2022) Machine-learning-assisted high-temperature reservoir thermal energy storage optimization. *Renewable Energy*, **197**, 384-397, <https://doi.org/10.1016/j.renene.2022.07.118>.
2. Olguín-Martínez, M.G., Peiffer, L., Dobson, P.F., Spycher, N., Inguaggiato, C., Wanner, C., Hoyos, A., Wurl, J., Makovsky, K., and Ruiz-Aguilar, D. (2022) PyGeoT: A tool to automate mineral selection for multicomponent geothermometry. *Geothermics*, **104**, 102467, <https://doi.org/10.1016/j.geothermics.2022.102467>
3. Ajo-Franklin, J., Rodríguez Tribaldos, V., Nayak, A., Cheng, F., Mellors, R., Chi, B., Wood, T., Robertson, M., Rotermund, C., Matzel, E., Templeton, D.C., Morency, C., Wu, K., Dong, B., and Dobson, P. (2022) The Imperial Valley dark fiber project: Towards seismic studies using DAS and telecom infrastructure for geothermal applications. *Seismological Research Letters*, doi: 10.1785/0220220072.
4. Basirat, F., Tsang, C.-F., Tatomir, A., Guglielmi, Y., Dobson, P., Cook, P., Dessirier, B., Juhlin, C., and Niemi, A. (2021) Hydraulic modeling of induced and propagated fractures: Analysis of flow and pressure data from hydromechanical experiments in the COSC-1 deep borehole in crystalline rock near Åre, Sweden. *Water Resources Research*, **57**, e2020WR029484. <https://doi.org/10.1029/2020WR029484>
5. Stringfellow, W.T., and Dobson, P.F. (2021) Technology for the recovery of lithium from geothermal brines. *Energies*, **14**(20), 6805, <https://doi.org/10.3390/en14206805>
6. Fu, P., Schoenball, M., Ajo-Franklin, J., Chai, C., Maceira, M., Morris, J.P., Wu, H., Knox, H., Schwering, P., White, M., Burghardt, J., Strickland, C., Johnson, T., Vermeul, V., Sprinkle, D., Roberts, B., Ulrich, C., Guglielmi, Y., Cook, P., Dobson, P., Wood, T., Frash, L., Huang, L., Ingraham, M., Pope, J., Smith, M., Neupane, G., Doe, T., Roggenthen, W., Horne, R., Singh, A., Zoback, M., Wang, H., Condon, K., Ghassemi, A., Chen, H., McClure, M., Vandine, G., Blankenship, D., Kneafsey, T. (2021) Close Observation of Hydraulic Fracturing at EGS Collab Experiment 1: Fracture Trajectory, Microseismic Interpretations, and the Role of Natural Fractures. *J. Geophys. Res. Solid Earth*, **126**, e2020JB020840, DOI: 10.1029/2020JB020840
7. Dobson, P.F., Kneafsey, T.J., Nakagawa, S., Sonnenthal, E.L., Voltolini, M., Smith, J.T., and Borglin, S.E. (2021) Fracture sustainability in enhanced geothermal systems: Experimental and modeling constraints. *J. Energy Resources Tech.*, **143**(10): doi:10.1115/1.4049181
8. Guglielmi, Y., Cook, P., Soom, F., Schoenball, M., Dobson, P., and Kneafsey, T. (2021) In Situ Continuous Monitoring of Borehole Displacements Induced by Stimulated Hydrofracture Growth. *Geophys. Res. Lett.*, **48**, e2020GL090782, DOI: 10.1029/2020GL090782
9. Millstein, D., Dobson, P., and Jeong, S. (2021) The potential to improve the value of U.S. geothermal electricity generation through flexible operations. *J. Energy Resources Tech.*, **143**(1): 010905. doi:10.1115/1.4048981
10. Schoenball, M., Ajo-Franklin, J.B., Blankenship, D., Chai, C., Chakravarty, A., Dobson, P., Hopp, C., Kneafsey, T., Knox, H.A., Maceira, M., Robertson, M.C., Sprinkle, P., Strickland, C., Templeton, D., Schwering, P.C., Ulrich, C., Wood, T., and the EGS Collab Team (2020) Creation of a mixed-mode fracture network at meso-scale through hydraulic fracturing and shear stimulation. *J. Geophys. Res. Solid Earth*, **125**, e2020JB019807. doi:10.1029/2020JB019807.
11. Dobson, P., Dwivedi, D., Millstein, D., Krishnaswamy, N., Garcia, J., and Kiran, M. (2020) Analysis of curtailment at The Geysers geothermal Field, California. *Geothermics* **87**, <https://doi.org/10.1016/j.geothermics.2020.101871>
12. Dobson, P., Gasperikova, E., Spycher, N., Lindsey, N.J., Guo, T.R., Chen, W.S., Liu, C.H., Wang, C.-J., Chen, S.-N., and Fowler, A.P.G. (2018) Conceptual model of the Tatun geothermal system, Taiwan. *Geothermics* **74**, 273–297.
13. Fowler, A.P.G., Ferguson, C., Cantwell, C.A., Zierenberg, R.A., McClain, J., Spycher, N., and Dobson, P. (2018) A conceptual geochemical model of the geothermal system at Surprise Valley, CA. *J. Volcanol. Geotherm. Res.* **353**, 132–148.
14. Lindsey, C.R., Neupane, G., Spycher, N., Fairley, J.P., Dobson, P., Wood, T., McLing, T., and Conrad, M. (2018) Cluster analysis as a tool for evaluating the exploration potential of Known Geothermal Resource Areas. *Geothermics* **72**, 358–370.

15. Reinsch, T., Dobson, P., Asanuma, H., Huenges, E., Poletto, F., and Sanjuan, B. (2017) Utilizing supercritical geothermal systems: a review of past ventures and ongoing research activities. *Geotherm. Energy* **5**, DOI 10.1186/s40517-017-0075-y.
16. Jeanne, P., Rutqvist, J., and Dobson, P.F. (2017) Influence of injection-induced cooling on deviatoric stress and shear reactivation of preexisting fractures in Enhanced Geothermal Systems. *Geothermics* **70**, 367–375.
17. Siler, D.L., Zhang, Y., Spycher, N.F., Dobson, P.F., McClain, J.S., Gasperikova, E., Zierenberg, R.A., Schiffman, P., Ferguson, C., Fowler, A., and Cantwell, C. (2017) Play-fairway analysis for geothermal resources and exploration risk in the Modoc Plateau region. *Geothermics* **69**, 15–33.
18. Doughty, C., Tsang, C.F., Rosberg, J.E., Juhlin, C., Dobson, P.F., and Birkholzer, J.T. (2017) Flowing fluid electrical conductivity logging of a deep borehole during and following drilling: estimation of transmissivity, water salinity and hydraulic head of conductive zones. *Hydrogeol. J.* **25**, 501–517.
19. Garcia, J., Hartline, C., Walters, M., Wright, M., Rutqvist, J., Dobson, P.F., and Jeanne, P. (2016) The Northwest Geysers EGS Demonstration Project, California. Part 1: Characterization and reservoir response to injection. *Geothermics* **63**, 97–119.
20. Rutqvist, J., Jeanne, P., Dobson, P.F., Garcia, J., Hartline, C., Hutchings, L., Singh, A., Vasco, D.W., and Walters, M. (2016) The Northwest Geysers EGS Demonstration Project, California – Part 2: Modeling and interpretation. *Geothermics* **63**, 120–138.
21. Aravena, D., Muñoz, M., Morata, D., Lahsen, A., Parada, M.A., and Dobson, P. (2016) Assessment of high enthalpy geothermal resources and promising areas of Chile. *Geothermics* **59**, 1–13.
22. Jeanne, P., Rutqvist, J., Dobson, P.F., Garcia, J., Walters, M., Hartline, C., and Borgia, A. (2015) Geomechanical simulation of the stress tensor rotation caused by injection of cold water in a deep geothermal reservoir. *J. Geophys. Res. Solid Earth* **120**, doi: 10.1002/2015JB012414
23. Jeanne, P., Rutqvist, J., Rinaldi, A.P., Dobson, P.F., Walters, M., Hartline, C., and Garcia, J. (2015) Seismic and aseismic deformations and impact on reservoir permeability: The case of EGS stimulation at The Geysers, California, USA. *J. Geophys. Res. Solid Earth* **120**, doi: 10.1002/2015JB012142
24. Sanchez-Alfaro, P., Sielfeld, G., van Campen, B., Dobson, P., Fuentes, V., Reed, A., Palma-Behnke, R., and Morata, D. (2015) Geothermal barriers, policies and economics in Chile – Lessons for the Andes. *Renew. & Sustain. Energy Rev.* **51**, 1390–1401.
25. Jeanne, P., Rutqvist, J., Hutchings, L., Singh, A., Dobson, P.F., Walters, M., Hartline, C., and Garcia, J. (2015) Degradation of the mechanical properties imaged by seismic tomography during an EGS creation at The Geysers (California) and geomechanical modeling. *Phys. Earth Planet. Int.* **240**, 82–94.
26. Rutqvist, J., Dobson, P.F., Garcia, J., Hartline, C., Jeanne, P., Oldenburg, C.M., Vasco, D.W., and Walters, M. (2015) The Northwest Geysers EGS demonstration project, California: Pre-stimulation modeling and interpretation of the stimulation. *Math. Geosci.* **47**, 3–29.
27. Jeanne, P., Rutqvist, J., Dobson, P.F., Walters, M., Hartline, C., and Garcia, J. (2014) The impacts of mechanical stress transfers caused by hydromechanical and thermal processes on fault stability during hydraulic stimulation in a deep geothermal reservoir. *Int. J. Rock Mech. Mining Sci.* **72**, 149–163.
28. Jeanne P., Rutqvist J., Hartline, C., Garcia J., Dobson P.F., and Walters M. (2014) Reservoir structure and properties from geomechanical modeling and microseismicity analyses associated with an enhanced geothermal system at The Geysers, California. *Geothermics* **51**, 460–469.
29. Jeanne P., Rutqvist J., Vasco, D., Garcia J., Dobson P.F., Walters M., Hartline, C., and Borgia, A. (2014) A 3D hydrogeological and geomechanical model of an Enhanced Geothermal System at The Geysers, California. *Geothermics* **51**, 240–252.
30. Vasco, D.W., Rutqvist, J., Ferretti, A., Rucci, A., Bellotti, F., Dobson, P., Oldenburg, C., Garcia, J., Walters, M., and Hartline, C. (2013) Monitoring deformation at the Geysers Geothermal Field, California using C-band and X-band interferometric synthetic aperture radar. *Geophys. Res. Lett.* **40**, 1–6, doi:10.1002/grl.50314.

31. Finsterle, S., Zhang, Y., Pan, L., Dobson, P., and Oglesby, K. (2013) Microhole arrays for improving heat mining from enhanced geothermal systems. *Geothermics* **47**, 104–115.
32. Oldenburg, C.M., Doughty, C., Peters, C.A., and Dobson, P.F. (2012) Simulations of long-column flow experiments related to geologic carbon sequestration: Effects of outer wall boundary condition on upward flow and formation of liquid CO₂. *Greenhouse Gases Sci. Technol.* **2**, 279–303.
33. Dobson, P.F., Ghezzehei, T.A., Cook, P.J., Rodriguez-Pineda, J.A., Villalba, L., and de la Garza, R. (2012) Heterogeneous seepage at the Nopal I natural analogue site, Chihuahua, Mexico. *Hydrogeol. J.* **20**, 155–166.
34. Goldstein, S.J., Abdel-Fattah, A.I., Murrell, M.T., Dobson, P.F., Norman, D.E., Amato, R.S., and Nunn, A.J. (2010) Uranium-series constraints on radionuclide transport and groundwater flow at the Nopal I uranium deposit, Sierra Peña Blanca, Mexico. *Environ. Sci. Tech.* **44**, 1579–1586.
35. Ku, T.L., Luo, S., Goldstein, S.J., Murrell, M.T., Chu, W.L., and Dobson, P.F. (2009) Modeling non-steady state radioisotope transport in the vadose zone – A case study using uranium isotopes at Peña Blanca, Mexico. *Geochim. Cosmochim. Acta* **73**, 6052–6064.
36. Blank, J.G., Green, S.J., Blake, D., Valley, J.W., Kita, N.T., Treiman, A., and Dobson, P.F. (2009) An alkaline spring system within the Del Puerto Ophiolite (California, USA): A Mars analog site. *Planet. Space Sci.* **57**, 533–540.
37. Dobson, P.F., Fayek, M., Goodell, P., Ghezzehei, T.A., Melchor, F., Murrell, M.T., Oliver, R., Reyes-Cortés, I., de la Garza, R., and Simmons, A. (2008) Stratigraphy of the PB-1 well, Nopal I uranium deposit, Sierra Peña Blanca, Chihuahua, Mexico, *Internat. Geol. Rev.* **50**, 959–974.
38. Dobson, P.F., Blank, J.G., Maruyama, S., and Liou, J.G. (2006) Petrology and geochemistry of boninite series volcanic rocks, Chichi-jima, Bonin Islands, Japan, *Internat. Geol. Rev.* **48**, 669–701.
39. Verma, S.P., Torres-Alvarado, I.S., Satir, M., and Dobson, P.F. (2005) Hydrothermal alteration effects in geochemistry and Sr, Nd, Pb, and O isotopes of magmas from the Los Azufres geothermal field (Mexico): A statistical approach. *Geochem. J.* **39**, 141–163.
40. Dobson, P.F., Salah, S., Spycher, N., and Sonnenthal, E. (2004) Simulation of water-rock interaction in the Yellowstone geothermal system using TOUGHREACT. *Geothermics* **33**, 493–502.
41. Hickman, R.G., Dobson, P.F., van Gerven, M., Sagala, B., and Gunderson, R.P. (2004) Tectonic and stratigraphic evolution of the Sarulla Graben region, North Sumatra, Indonesia. *J. Asian Earth Sci.* **23**, 435–448.
42. Dobson, P.F., Kneafsey, T.J., Hulen, J., and Simmons, A. (2003) Porosity, permeability, and fluid flow in the Yellowstone geothermal system, Wyoming. *J. Volcanol. Geotherm. Res.* **123**, 313–324.
43. Dobson, P.F., Kneafsey, T.J., Sonnenthal, E.L., Spycher, N., and Apps, J.A. (2003) Experimental and numerical simulation of dissolution and precipitation: Implications for fracture sealing at Yucca Mountain, Nevada. *J. Contam. Hydrol.* **62–63**, 459–476.
44. Moore, D.E., Hickman, S., Lockner, D.A., and Dobson, P.F. (2001) Hydrothermal minerals and microstructures in the Silangkitang geothermal field along the Great Sumatran fault zone, Sumatra, Indonesia. *Geol. Soc. Amer. Bull.* **113**, 1179–1192.
45. Dobson, P.F., Skogby, H., and Rossman, G.R. (1995) Water in boninite glass and coexisting orthopyroxene: concentration and partitioning. *Contrib. Mineral. Petrol.* **118**, 414–419.
46. Cousens, B.L., Spera, F.J., and Dobson, P.F. (1993) Post-eruptive alteration of silicic ignimbrites and lavas, Gran Canaria, Canary Islands: Strontium, neodymium, lead, and oxygen isotopic evidence. *Geochim. Cosmochim. Acta* **57**, 631–640.
47. Dobson, P.F., Epstein, S., and Stolper, E.M. (1989) Hydrogen isotope fractionation between coexisting vapor and silicate glasses and melts at low pressure. *Geochim. Cosmochim. Acta* **53**, 2723–2730.
48. Banner, J.L., Wasserburg, G.J., Dobson, P.F., Carpenter, A.B., and Moore, C.H. (1989) Isotopic and trace element constraints on the origin and evolution of saline groundwaters from central Missouri. *Geochim. Cosmochim. Acta* **53**, 383–398.
49. Dobson, P.F., and O'Neil, J.R. (1987) Stable isotope compositions and water contents of boninite series volcanic rocks from Chichi-jima, Bonin Islands, Japan. *Earth Planet. Sci. Lett.* **82**, 75–86.

50. Dobson, P.F., and Mahood, G.A. (1985) Volcanic stratigraphy of the Los Azufres geothermal area, Mexico. *J. Volcanol. Geotherm. Res.* **25**, 273–287.

BOOK CHAPTERS

1. Dobson, P.F., and Tilton, G. (1989) Th, U and Pb systematics of boninite series volcanic rocks from Chichi-jima, Bonin Islands, Japan. In: Boninites, A.J. Crawford, ed., Unwin Hyman Ltd, London, 396–415.

OTHER PUBLICATIONS

1. Kolker, A., Taverna, N., Dobson, P., Benediksdóttir, A., Warren, I., Pauling, H., Sonnenthal, E., Hjörleifsdóttir, V., Hokstad, K., and Calandro, N. (2022) Exploring for superhot geothermal targets in magmatic setting: Developing a methodology. *Geothermal Rising Conference Transactions*, v. 46, 285-307.
2. Kneafsey, T., Blankenship, D., Burghardt, J., Johnson, T., Dobson, P., Schwering, P.C., Strickland, C., Vermuel, V., White, M., Morris, J.P., Fu, P., Ingraham, M., Roggenthen, W., Hopp, C., Rodriguez Tribaldos, V., Guglielmi, Y., Knox, H., Cook, P., Soom, F., Doe, T., Ulrich, C., Ajo-Franklin, J.B., Huang, L., Neupane, G., Pyatina, T., Weers, J., and The EGS Collab Team (2022) The EGS Collab – Experiment 2 stimulations at 1.25 km depth. *Geothermal Rising Conference Transactions*, v. 46, 477-493.
3. Robertson, M., Su, J., Kaven, J.O., Hopp, C., Hirakawa, E., Gasperikova, E., Dobson, P., Schwering, P., Nakata, N., and Majer, E.L. (2022) The Amplify monitoring team: Initial design, development, and deployment of seismic monitoring systems for in-field and near-field EGS well stimulation. *Geothermal Rising Conference Transactions*, v. 46, 755-771.
4. Jin, W., Atkinson, T., Neupane, G., McLing, T., Doughty, C., Spycher, N., Dobson, P., and Smith, R. (2022) Influence of mechanical deformation and mineral dissolution /precipitation on reservoir thermal energy storage. *Proceedings, 56th US Rock Mechanics/Geomechanics Symposium*, ARMA 22-2068, 14 p.
5. Kneafsey, T.J., Dobson, P.F., Ulrich, C., Hopp, C., Rodríguez-Tribaldos, V., Guglielmi, Y., Blankenship, D., Schwering, P., Ingraham, M., Burghardt, J.A., White, M.D., Johnson, T.E., Strickland, C., Vermuel, V., Knox, H.A., Morris, J.P., Fu, P., Smith, M., Wu, H., Ajo-Franklin, J.B., Huang, L., Horne, R., Roggenthen, W., Weers, J., Doe, T.W., Pyatina, T., and the EGS Collab Team (2022) The EGS Collab Project – Stimulations at Two Depths. *Proceedings, 56th US Rock Mechanics/Geomechanics Symposium*, ARMA 22-2261
6. Burghardt, J., Knox, H.A., Doe, T., Blankenship, D., Schwering, P.C., Ingraham, M., Kneafsey, T.J., Dobson, P.F., Ulrich, C., Guglielmi, Y., and Roggenthen, W. (2022) EGS stimulation design with uncertainty quantification at the EGS Collab site. *Proceedings, 56th US Rock Mechanics/Geomechanics Symposium*, ARMA 22-2224.
7. Ulrich, C., Dobson, P.F., Kneafsey, T.J., Roggenthen, W.M., Uzunlar, N., Doe, T.W., Neupane, G., Artz, T., Dobler, K., Schwering, P.C., Smith, M., and Burghardt, J.A. (2022) Characterizing rock fractures and physical properties for Experiment 2 of the EGS Collab project, Sanford Underground Research Facility. *Proceedings, 56th US Rock Mechanics/Geomechanics Symposium*, ARMA 22-2226.
8. Winn, C., Dobson, P., Ulrich, C., Kneafsey, T., Lowry, T., Akerley, J., Delwiche, B., Samuel, A., and Bauer, S. (2022) Mitigation strategies and geologic context of lost circulation at Steamboat Hills, Nevada. *Proceedings, 47th Workshop on Geothermal Reservoir Engineering*, Stanford University, 8 p.
9. Lowry, T., Winn, C., Dobson, P., Samuel, A., Kneafsey, T., Bauer, S., and Ulrich, C. (2022) Examining the monetary and time costs of lost circulation. *Proceedings, 47th Workshop on Geothermal Reservoir Engineering*, Stanford University, 8 p.
10. Kneafsey, T., Blankenship, D., Dobson, P., Burghardt, J., White, M., Morris, J.P., Johnson, T., Ingraham, M., Ulrich, C., Roggenthen, W., Doe, T., Smith, M., Ajo-Franklin, J.B., Huang, L., Neupane, G., Pyatina, T., Schwering, P.C., Hopp, C., Rodriguez Tribaldos, V., Guglielmi, Y., Strickland, C., Vermuel, V., Fu, P., and The EGS Collab Team. The EGS Collab – Initial results from Experiment 2: Shear stimulation at 1.25 km depth. *Proceedings, 47th Workshop on Geothermal Reservoir Engineering*, Stanford University, 20 p.
11. Hu, J., Doughty, C., Dobson, P., Nico, P., and Wetter, M. (2022) Coupling subsurface and above-surface models for optimizing the design of boreholes and district heating and cooling systems in the presence of moving groundwater. *Proceedings, 47th Workshop on Geothermal Reservoir Engineering*, Stanford University, 8 p.

12. Chen, K., Sun, X., Soga, K., Dobson, P.F., and Nico, P.S. (2021) 1D heat loss models to predict the aquifer temperature profile during hot/cold water injection. *GRC Transactions*, 45, 405-419.
13. Winn, C., Dobson, P., Ulrich, C., Kneafsey, T., Lowry, T., Akerley, J., Delwiche, A., and Bauer, S. (2021) Lost circulation in a hydrothermally cemented basin-fill reservoir: Don A. Campbell geothermal field, Nevada. *GRC Transactions*, 45, 622-633.
14. Kneafsey, T., Blankenship, D., Dobson, P., White, M., Morris, J.P., Fu, P., Schwering, P.C., Ajo-Franklin, J.B., Huang, L., Knox, H.A., Strickland, C., Burghardt, J., Johnson, T., Neupane, G., Weers, J., Horne, R., Roggenthen, W., Doe, T., Mattson, E., and the EGS Collab Team (2021) The EGS Collab project: Status and accomplishments. *GRC Transactions*, 45, 694-709.
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